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**TAN:** 027203

**DATE:** 11/21/83

<b>1st Catalog</b> AK 11-21	<b>Index</b> ST 11/21
<b>Initial Q.C.</b> ST 11/21/83	<b>Abstract</b> ST 11/21
<b>2nd Catalog</b> ST 11/21	<b>Final Q.C.</b>

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# Perspectives on Productivity in the U.S. Defense Establishment

GAO is examining whether Defense Department productivity initiatives show tangible progress. The findings so far are mixed.

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What constitutes productivity at the Department of Defense (DOD) and among defense contractors? How is it measured? Who manages it? Are productivity increases compatible with readiness goals in the defense establishment? Is productivity a significant concept in the current debate over the size of the defense budget? These are some of the questions the U.S. General Accounting Office (GAO), Congress's investigative arm, is attempting to answer in reviewing productivity in DOD and among its contractors.

Improving productivity in DOD activities has become increasingly important to GAO and others because of:

- An expanding defense budget that has brought louder and louder calls from members of Congress and the public for assurances that the additional defense funds be spent efficiently;

- Public announcements and comments by DOD officials on major efficiency and productivity initiatives they claim will save billions of dollars; and
- Rising concern over the ability of the defense establishment to meet military needs.

Many observers believe DOD's productivity can and should be improved. Others question whether the concept can be realistically applied in the defense establishment, given the nature of defense activities.

## How does DOD define productivity?

The lines are blurred on the question "What is productivity?" Definitions vary, even within DOD.

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The department's regulations define productivity as "the efficiency with which an organization utilizes its resources to provide final outputs." The Department of the Navy is more cryptic, defining productivity as the "efficiency with which an activity employs its resources in the performance of its mission." The Army takes a slightly different approach, defining productivity as "an improvement in the efficiency and/or-effectiveness with which resources are used to accomplish a function."

Air Force regulations provide a more expanded view of the term. Here, productivity refers to both "efficiency" (the ratio of inputs to outputs) and "effectiveness" (to what extent the output satisfies mission objectives). According to the Air Force, it involves not only questions of quantity and cost, but also quality, timeliness, responsiveness, and readiness. The Air Force has adopted the motto "Productivity—It All Comes Back To You." Ultimately, the term productivity is equated with "good management" by Air Force regulations.

Air Force regulations also refer to a number of "productivity-related programs," many of which exist in all three services. These eleven programs, established during the last thirty years, include Value Engineering, Manufacturing Technology, Energy Conservation Management, Job Enrichment, and Productivity Enhancing Capital Investment, among others. Several of the programs—Manufacturing Technology and Value Engineering, for example—are used to enhance both internal DOD and contractor productivity.

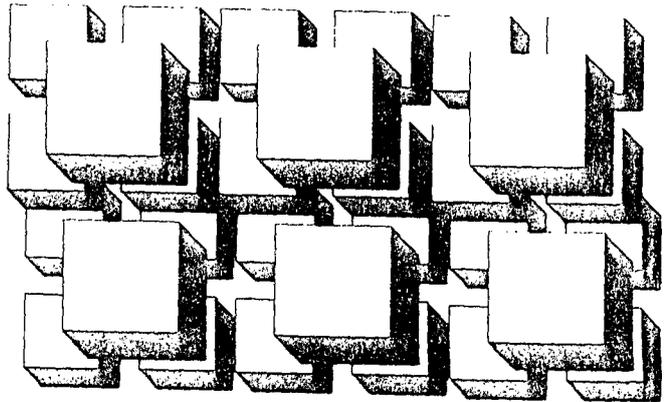
There are common themes in these varying definitions of "productivity" within DOD. The variations center on how expansively the concept is interpreted and where the line is drawn between productivity and other management responsibilities. More fundamental than the variations in definition, however, is how DOD translates the term into action.

## Formalized efforts to manage productivity

The Office of the Secretary of Defense (OSD) established in 1975 a formal DOD Productivity Pro-

gram directing the military departments and their components to develop annual productivity improvement goals and programs to achieve those goals. In 1979, the program was further refined when the assistant secretary of defense for manpower, reserve affairs, and logistics was given overall responsibility for its operation, and the program was specifically targeted to DOD's internal support operations. While implementation has varied across the military services, all of the branches have established offices to develop policy and focus attention on internal productivity. In addition, reporting systems related to productivity have either been established or strengthened.

Until recently, DOD did not have a central office to coordinate defense contractor productivity programs and develop new productivity improvement incentives. Recognizing the need to fill this gap and to focus management attention on improving the productivity of contractors in DOD acquisition programs, OSD last year established the Office of Industrial Productivity. This office ultimately reports to the under secretary of defense for research and engineering, who is responsible for all DOD weapons acquisition policies. According to the under secretary, the new office will provide a vital link between DOD and U.S. industry by serving as a focal point for the productivity enhancement efforts of industry, DOD, and other government agencies. One of its first planned initiatives is to expand the government's currently available guidance and techniques for encouraging productivity-enhancing capital investment in defense industries.



# *Only 35 percent of the DOD civilian and 12 percent of the military work force are covered by the federal productivity measurement program.*

## Improving productivity at DOD: techniques and approaches

DOD has established different approaches and techniques for improving productivity. Four basic methods employed by DOD are:

- Productivity Measurement and Evaluation—defining and measuring the productivity of activities, programs, and functions;
- Methods and Standards Improvement—streamlining work procedures and processes and refining labor performance standards;
- Productivity-Enhancing Capital Investment—providing more efficient tools, equipment, and facilities; and
- Productivity-Enhancing Human-Resources Investment—increasing employee skill, motivation, and quality of work life.

### Productivity measurement and evaluation

The productivity measurement and evaluation facet of the DOD productivity program includes three related efficiency measures: work measurement, productivity indexes, and unit cost comparisons. These measures—or evaluation techniques—have been used in programming and budgeting, in analyzing investment alternatives, and in determining manpower requirements. While these applications have improved productivity when used in concert with improved management, serious measurement problems still exist in DOD. For example, only 35 percent of the DOD civilian and 12 percent of the military work force are covered by the productivity measures included in the federal productivity measurement program. Furthermore, this coverage has not significantly increased in recent years.

### Methods and standards improvement

While DOD has undertaken initiatives to improve methods and standards, the usefulness of this portion of the productivity program is also limited by

many problems. One GAO report, for example, disclosed that many of DOD's most serious methods and standards problems still exist.<sup>1</sup> They include the widespread use of subjective or "nonengineered" standards in DOD facilities. Despite these limitations, DOD has reported productivity increases through the application of improved methods and standards. The most intensive applications have been in depot maintenance, arsenal, depot supply, and real property maintenance activities. All have been extensively reviewed by GAO.

For example, in its review of depot maintenance of Army combat vehicles, GAO found that an Army depot in Europe, in contrast to three Army depots in the U.S., achieved sizeable savings from concentrated efforts to improve work methods. This depot reported first-year savings of about \$400,000 in fiscal 1979 and reductions of 8,250 direct-labor hours. In a more recent study, GAO found that increased work-load capabilities can be achieved at air logistics centers when non-engineered standards are upgraded from historical estimates to engineered standards. Overall, GAO has found that labor efficiency increases 15 to 20 percent where labor performance standards resulting from work measurement efforts have been used in concert with improved management.

### Productivity-enhancing capital investment

Of the four approaches, productivity-enhancing capital investment has received the most attention, probably because its results can be most readily measured. Productivity-enhancing capital investments are investments in facilities and equipment that are intended to improve productivity and pay for themselves in specified periods of time. Separate funds (described in Table 1) were established by DOD to encourage efficient funding and implementation of capital investment projects. The fiscal year 1983 budget includes a total of \$190 million for such projects, the largest amount being \$121 million for Productivity Investment Funds.

GAO reviewed the Productivity Enhancing Incentive Funds (PEIF) program in 1978 and again in 1981 and verified savings achieved through use of this technique.<sup>2</sup> The Air Force, in particular, appears to have used it with some success. For example, the Air Force

***The Air Force says 134 productivity incentive investments in fiscal 1981 yielded \$14.5 million in annual savings, plus significant manpower savings.***

**Table 1  
The DOD Productivity-Enhancing Capital Investment Program**

INVESTMENT EFFORT	FISCAL YEAR STARTED	PROJECT COST LIMIT	PAYBACK PERIOD	INVESTMENT TARGET
Productivity Enhancing Incentive Funds (PEIFs)	1977	More than \$3,000 to less than \$100,000	2 Years	Small dollar labor-saving equipment items in all DOD activities
Industrial Fund Fast Payback (IFFP)	1975*	More than \$3,000 to less than \$300,000	3 Years	Equipment to reduce operating costs in industrial-type activities
Productivity Investment Funds (PIFs)	1981	More than \$100,000	4 Years	Major equipment/facilities selected on basis of rates of return (all DOD activities)
Component-Sponsored Investment Funds (CSIFs)	1981	Established by each service/agency	Variable	Mission-oriented investment projects to complement OSD funds

\*IFFP was not continued after FY 1982 because of a requirement to capitalize all equipment in industrially funded activities.

estimates its 134 PEIF investments in fiscal year 1981 yielded \$14.5 million in annual savings, in addition to significant manpower savings. Many of these small dollar investments have paid for themselves well within the first year of investment. The Productivity Investment Funds' projects, on the other hand, are larger initial investments (in robotics, office automation, and materials-handling technology, for example) and generally have a longer expected economic life. DOD has forecast an astounding eleven-to-one return on its 1983 investment in these projects.

### **Productivity-enhancing human-resources investment**

Each military service also has pursued efforts to improve productivity through human-resource investment. Some elements of this effort are part of the DOD's formal productivity program while others are not. The Army, for example, has a relatively large Organizational Effectiveness Program outside DOD's formal productivity structure. This program has more than 600 organizational effectiveness staff officers located in 12 of the 18 major commands. The officers provide a wide range of organizational development services directly to the Army's commanders.

The Navy and the Air Force maintain smaller but similar programs. The Navy's Organizational Development Program is part of DOD's formal productivity program. It includes productivity-based incentive systems at various activities, over 300 quality circles, and several productivity awareness efforts. This program focuses on the Navy's shore establishments and industrial facilities. The Air Force also employs quality circles, job enrichment, and other human-resources techniques to improve productivity. While cost savings from these programs are not easily quantified, DOD managers have supported these efforts and claim significant benefits. Over the long term, GAO hopes to analyze in depth several of DOD's approaches to improving productivity through investments in human resources.

### **DOD publicity on success of productivity and efficiency initiatives**

In the wake of this Administration's sizeable increases in defense spending, DOD has publicized

## *The Army has more than 600 organizational effectiveness staff officers located in 12 of the 18 major commands.*

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major initiatives under way to improve efficiency and enhance productivity in the defense establishment. Moreover, DOD has publicly stated that these initiatives are achieving substantial cost reductions or avoidances.

Recent instances of DOD pronouncements on efficiency and productivity include the following:

- A DOD announcement of the Acquisition Improvement Program (often called the Carlucci Initiatives), which is aimed at reducing the acquisition costs of major weapon systems through improved productivity and other efficiency measures;
- A DOD announcement on the establishment of a new DOD Office of Industrial Productivity to focus on ways to improve defense contractor productivity and, in effect, institutionalize several of the Carlucci Initiatives (from a June 1982 DOD press release); and
- A statement that productivity enhancement and improvements will be among the measures used to identify and eradicate inefficiency and unnecessary defense operations costs (by the DOD Council on Integrity and Management Improvement).

Also, the fiscal 1983 DOD budget presentation included numerous references to the department's intended productivity improvements or enhancements. Some measures cited to improve productivity were further consolidation of common activities, increased capital investments, and better use of computer capabilities. For the most part, the measures relate to improving DOD's internal productivity and are not totally new ideas. Moreover, the DOD budget document did not specify whether all productivity gains envisioned would be measurable.

DOD also is trying to improve contractor productivity. The Carlucci Initiatives, for example, included measures to encourage capital investments in defense contractor plants that could improve their productivity. They also included an increase in funds provided for the Manufacturing Technology Program, which pays defense contractors to demonstrate the feasibility of new technologies in manufacturing.

The Carlucci Initiatives have been widely discussed in defense establishment literature, public speeches, and congressional testimony. These initia-

tives have been well received in some defense circles, although a number of observers have expressed reservations about them. Several have pointed out that the initiatives contain little that is new. Some have viewed them as simply a summary and reemphasis of many old concepts that have not been highly successful. More recently, DOD has recognized the need to bring more focus to the Acquisition Improvement Program. The current deputy secretary of defense, for example, intends to emphasize a half dozen of the potentially more profitable initiatives.

The June 1982 establishment of a DOD Office of Industrial Productivity gives a central DOD focus for its defense contractor productivity efforts and, in effect, institutionalizes several of the Carlucci Initiatives. This office has already developed an approach to test a "package" of contractual arrangements among a small number of contractors, and seeks eventually to include many more in such arrangements. Because the role and structure of the Office of Industrial Productivity is still evolving, it is premature to judge its effectiveness. GAO will, however, be monitoring its achievements.

The DOD Council on Integrity and Management Improvement, established in September 1981, consists of high-level representatives from the three military services. Its purpose is to seek ways to improve efficiency and cut costs of defense operations. The council explores various avenues for ideas, including internal audit reports, program status reports, and management plans. One of many areas in which it has expressed interest is productivity enhancement. We have not attempted to assess whether this high-level mechanism has been an effective catalyst to productivity enhancement in the defense establishment, but we agree that productivity enhancement should interest the council.

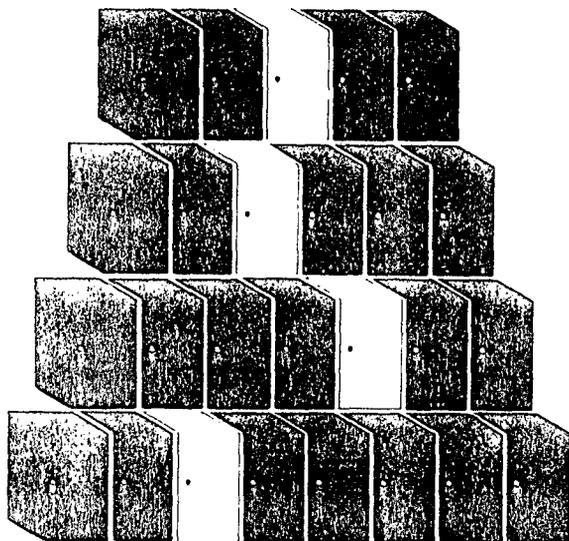
And what has DOD had to say about the results of its efforts? According to recent DOD public statements and congressional testimony on efficiency improvement, productivity enhancements, and cost avoidances, the department is making great strides. For example, on February 8, 1982, the secretary of defense stated that actions already taken by DOD—including some productivity enhancements—would avoid over \$50 billion in costs between fiscal 1981 and 1987. More recently, the secretary announced a revised estimate of \$96.5 billion for the period of fiscal 1981 to 1988.

# The 1982 establishment of the Office of Industrial Productivity gives DOD a central focus for its defense contractor productivity efforts.

## Questions about DOD's claims

However, Congress and the public have already raised questions about DOD's claims. For example, in March 1982 hearings before the Subcommittee on Defense of the House Appropriations Committee, DOD officials were hard pressed to show specific measurable results from the Carlucci Initiatives. During the same hearings, DOD was questioned about the appropriateness of including about \$24 billion in governmentwide "pay caps" in its claimed \$50 billion cost avoidances for DOD.

GAO continues to focus on the reality behind the public image DOD has presented. GAO divisions are monitoring DOD's progress under the Carlucci Initiatives. Also, in response to a request from the Senate Committee on Armed Services, GAO was asked to analyze the \$50 billion cost avoidance DOD has claimed.<sup>3</sup> After reviewing about \$40 billion of the claimed cost avoidances, GAO concluded that the bulk of them could not be substantiated.



## Focusing greater GAO attention on DOD productivity issues

To bring a more centralized GAO focus to DOD productivity issues, GAO's National Productivity

Group—which has been grappling with thorny productivity issues since 1977—has decided to focus a significant portion of its work on the question of DOD's effectiveness in improving its productivity and that of its contractors. The National Productivity Group's efforts regarding DOD are based on a strategy to achieve long-term, agencywide approaches to improving productivity, in addition to correcting near-term productivity problems in specific programs or activities.

The emphasis the National Productivity Group is now placing on DOD productivity issues does not mean that GAO has previously been ignoring this area. Much of GAO's past and ongoing work has involved reviewing issues and making recommendations directed toward enhancing defense productivity. Table 2 lists some of the reports resulting from these previous efforts.

When the National Productivity Group decided to focus more of its work on the defense area, we relied on previous GAO work and on a far-ranging survey of our own to identify potential reviews that show a high probability of producing significant savings and management improvements. Since then, congressional interest has generated further GAO work on DOD productivity issues.

Table 2

### Some Recent GAO Reports That Addressed DOD Productivity Issues

1. "Followup on Use of Numerically Controlled Equipment to Improve Defense Plant Productivity" (LCD 78 427, January 17, 1979).
2. "Impediments to Reducing the Costs of Weapon Systems" (PSAD 80 6, November 8, 1979).
3. "Productivity Measurement in the Defense Logistics Agency Must Be Supported, Improved and Used" (IGMSD 80 41, April 18, 1980).
4. "Military Standard on Work Measurement—A Way to Control Cost and Increase Productivity" (PSAD-80-46, June 3, 1980).
5. "Incentive Programs to Improve Productivity Through Capital Investments Can Work" (AFMD-81-43, April 20, 1981).
6. "Improved Work Measurement Program Would Increase DOD Productivity" (PLRD-81-20, June 8, 1981).

## ***GAO found that the bulk of DOD's \$50 billion in claimed cost avoidances could not be substantiated.***

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Our overall strategy for examining DOD productivity issues entails reviewing DOD or service-level policies and programs related to productivity as well as identifying changes needed to improve the productivity of functions such as equipment maintenance. Reviews of policy questions will involve identifying management structures and practices that are incentives or barriers to productivity improvement.

The National Productivity Group's current effort is primarily in the area of contractor productivity, where we recently completed a follow-up to a 1977 GAO report on DOD's Value Engineering program. This program provides incentives to contractors to increase productivity, improve product quality, and reduce costs through cost sharing. Based on our follow-up review, we recently issued a report that recommended action by DOD in four major areas. As a result, DOD has already indicated it will renew its efforts to revitalize the contractor component of the Value Engineering program.

Several aspects of DOD's Manufacturing Technology and related programs also are being examined. Manufacturing Technology is designed to take lab-tested manufacturing processes and procedures and prove their feasibility on the plant floor as a way of encouraging contractors to adopt state-of-the-art technologies.

Finally, one of the group's most challenging tasks is to determine how DOD can encourage contractors to integrate design and production engineering. Lack of integration is often cited as a cause for greatly increased acquisition costs and lowered productivity. However, the issue also involves many complex DOD policies and entrenched contractor practices.

### **Productivity goals and other defense priorities**

Where do productivity goals fit in relation to other important defense goals, such as improved readiness? Military readiness is viewed by some as both more important than, and in conflict with, productivity. For example, the Defense Department wants to ensure that the nation has the surge capacity to meet needs in times of crisis. To maintain this capacity, some produc-

tion facilities may be run at inefficiently low capacity during peacetime.

An earlier GAO report discussed the productivity impact, among other consequences, of DOD's acquisition of highly sophisticated weapon systems.<sup>4</sup> We concluded that, while high-performance systems usually possess important capabilities such as firepower, mobility, protection, endurance, and so forth, they also tend to:

- Increase operating cost;
- Decrease the number of operating hours before failure; and
- Increase the maintenance load (for example, more maintenance actions, man-hours, and personnel).

In turn, these negative consequences tend to lower the effectiveness and productivity of the system, resulting in a reduction of mission capability.

Thus, potential conflicts may arise between productivity improvement and other defense goals. Our observations and discussions in the defense establishment confirm that some parties believe that defense needs must have priority over productivity goals. However, despite the undeniable importance of other defense needs, a large proportion of activities in procurement, logistics, maintenance, and repair are clearly amenable to productivity-improving efforts.

### **Conclusion**

The term "productivity" has been increasingly heard in the defense establishment over the past few years. DOD has issued productivity directives and established formal productivity programs; top-level DOD support has been pledged; and DOD's public statements proclaim that productivity is improving in the defense establishment. Yet, questions and obstacles remain. There is debate over (1) how to measure productivity in the defense environment, (2) where productivity goals fit in relation to other defense goals, and (3) whether the concept can apply to all military functions. Our view is that productivity is a necessary management principle in the defense establishment, and that it can and must be defined and applied realistically.

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Congress, in response to public discussion and debate, is faced with the task of scrutinizing the defense budget to see that monies are spent wisely and efficiently by DOD. As a result, the goal of improving productivity in the defense establishment has assumed much greater significance to GAO. As Congress's investigative arm, we will be pressed to evaluate whether DOD's productivity initiatives are resulting in tangible and verifiable progress. Thus far, we can see both positive and negative signals—with no clear-cut overall picture emerging. Because of the ultimate impact on the nation's defense posture as well as the entire economy, stimulating productivity improvement in the defense establishment is a crucial task for the GAO—and of vital importance to America's future.

#### NOTES

1. "Improved Work Measurement Program Would Increase DOD Productivity." (PLRD-81-20, June 8, 1981).
2. "Full Potential to Achieve Savings By Investing in Fast Payback Productivity Enhancing Capital Equipment Not Realized" (FGMSD-78-44, July 25, 1978), and "Incentive Program to Improve Productivity Through Capital Investments Can Work" (AFMD-81-43, April 20, 1981).
3. Letter Report to Chairman, Senate Committee on Armed Services, dated April 30, 1982.
4. "Implications of Highly Sophisticated Weapons Systems on Military Capabilities" (PSAD-80-61, June 30, 1980).

#### RESOURCES

GAO reports cited in this article are available to the public. The first five copies of individual reports are free. Requests for copies of these reports should be sent to: U.S. General Accounting Office, Document Handling and Information Service Facility, P.O. Box 6015, Gaithersburg, MD 20760. Phone: (202) 275-6241.

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